

February 2006



# Noise

## Mitigation Monitoring Report

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## Hot Button Issues!

### **Air Canada**

*Most compliant airline this month*

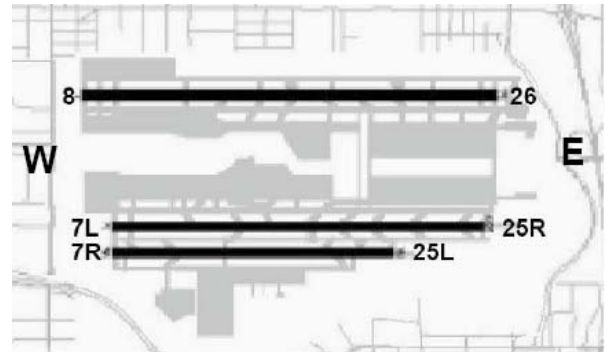
*TAVCO to review citizen input on  
work plan for the Finance &  
Aviation Council Committee*



Tempe Aviation Commission

## 1. Introduction

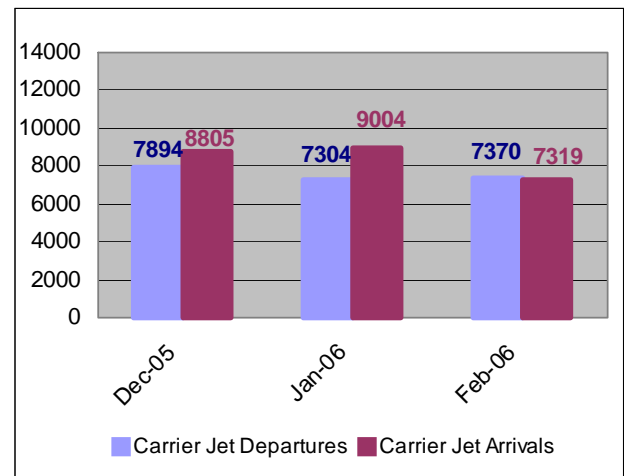
This report is assembled for the Tempe Aviation Commission (TAVCO) to monitor the monthly compliance of operations at Phoenix Sky Harbor International Airport with certain noise mitigation flight procedures over the City of Tempe, see Appendix 1 to this report. TAVCO consists of 13 Tempe residents appointed by the Tempe Mayor with approval of the City Council to assist and advice on aviation noise and other issues relating to the Phoenix Sky Harbor International Airport. The City of Tempe is located directly east of the Phoenix Sky Harbor International Airport. The airport has 3 parallel runways and is owned and operated by the City of Phoenix.



## 2. Aircraft Operations

### Carrier Aircraft

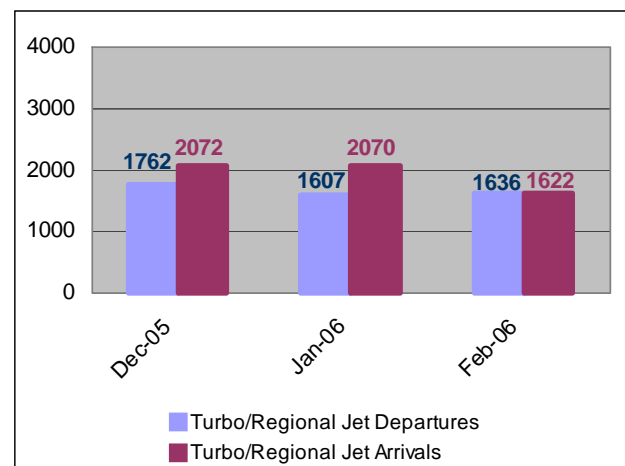
The number of large carrier jets departing to the east during the month of February 2006 increased 0.9% compared to January 2006. Carrier arrival operations from the east towards the west decreased 18.7% compared to operations in January 2006.



### Regional Jets & Large Turboprop Aircraft

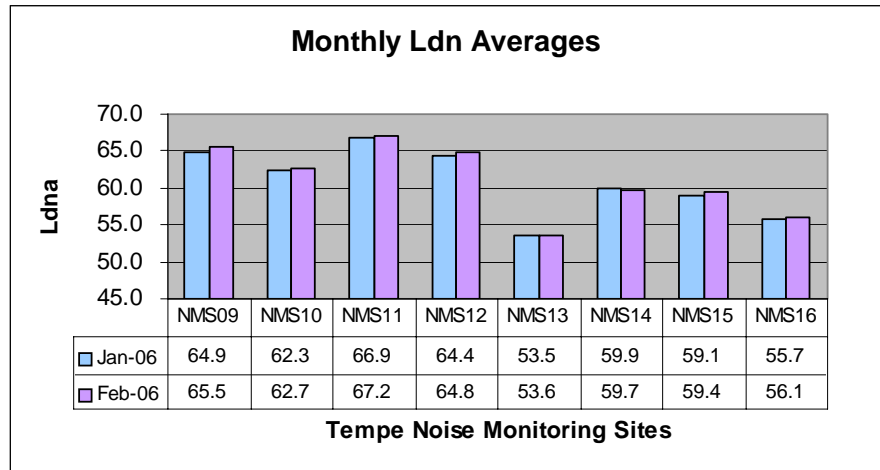
Regional jets and large turboprop departures towards the east increased 1.8% in February 2006 compared to January 2006. The number of regional jets and large turboprop aircraft arriving from the east decreased by 21.6% compared to the previous month.

Of all jet and large turboprop departures to the east, 147 departures or 1.6% occurred between 0:00 and 6:00 a.m. Also 1.5% or 136 of all jet and large turboprop arrivals from the east occurred between these early hours.



### 3. Noise

On average Ldn (DNL) energy levels were slightly higher in February 2006 compared to the month of January 2006. The highest maximum level inside the 65 - 70 DNL noise contour lines were NMS 11 with 67.4 Ldn, slightly lower than the 68.9 Ldn, registered by this site in January 2006. This is the monitoring site in Tempe Beech Park, located on the opposite side of the Rio Salado Parkway from the U.S. Airways building in downtown Tempe.

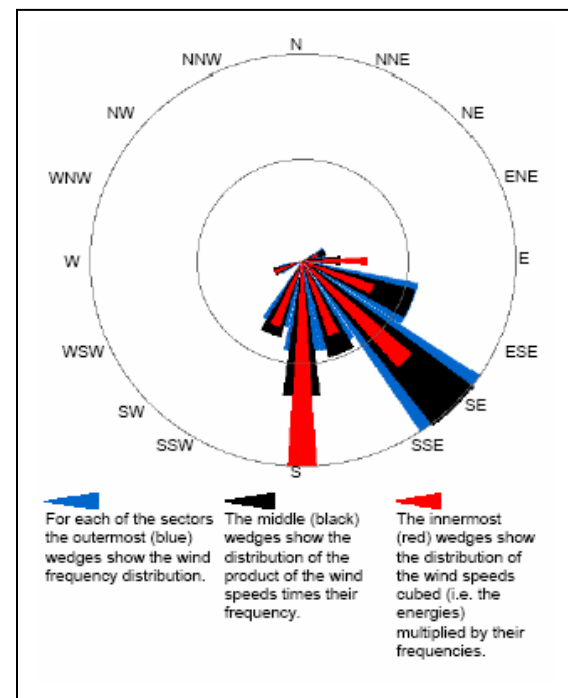


### 4. Weather

On a daily average the winds were mainly coming from the south and southeast. Wind speeds up to fresh breeze, 18 knots were registered on February 15, 2006 at 5:00 p.m.

Aircraft deviations during hours when cross winds exceeded 10 knots were excluded from calculations of compliance rates for this month. This was occurring during the following hours:

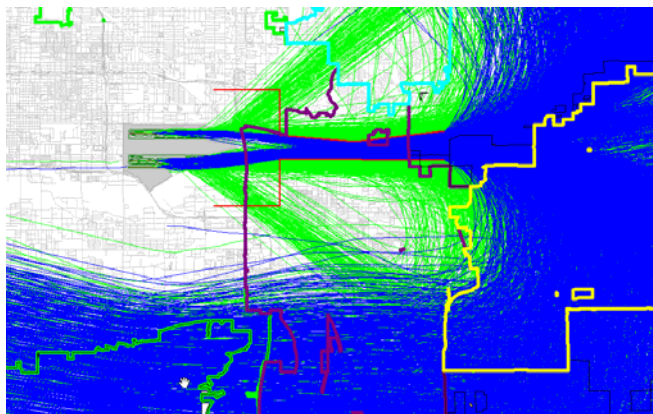
|            |  |
|------------|--|
| 02/06/2006 | 9:00, 10:00                              |
| 02/07/2006 | 0:00, 7:00, 8:00                         |
| 02/08/2006 | 9:00, 21:00,                             |
| 02/09/2006 | 16:00                                    |
| 02/11/2006 | 10:00, 11:00, 12:00                      |
| 02/12/2006 | 10:00, 11:00, 13:00, 15:00               |
| 02/15/2006 | 15:00, 16:00, 17:00, 18:00, 19:00, 20:00 |
| 02/21/2006 | 16:00, 17:00                             |



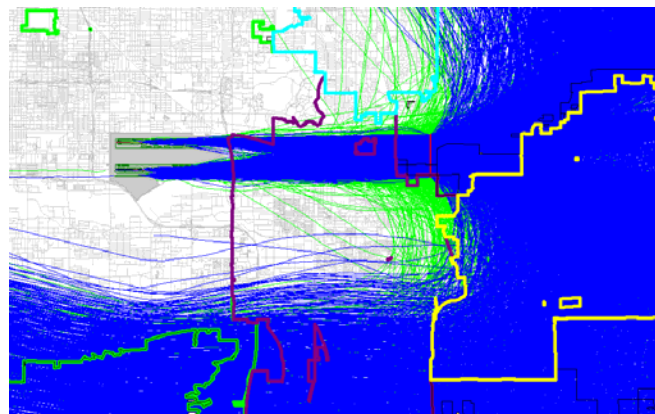
## 5. Departure Compliance

### Compliance Rates

Including the large turboprop aircraft, which routinely are routed on approximate departure angles of 120° towards the southeast and 60° towards the northeast, **63.4%** of all jet and larger turboprop aircraft departures to the east complied with the Tempe Corridor during the month of February 2006. 95.8% of the jets complied with the Phoenix 4 DME gate. Departures by large turboprop aircraft are not included in the Phoenix gate compliance rate.



Flight tracks inside the Tempe Corridor are depicted in blue.

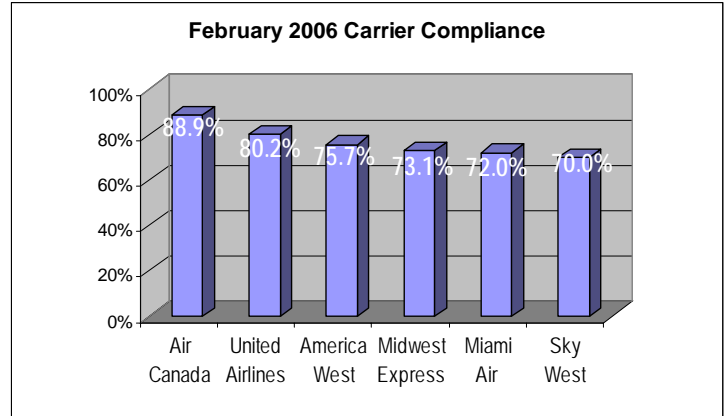


Flight tracks inside the Phoenix Gate are depicted in blue.

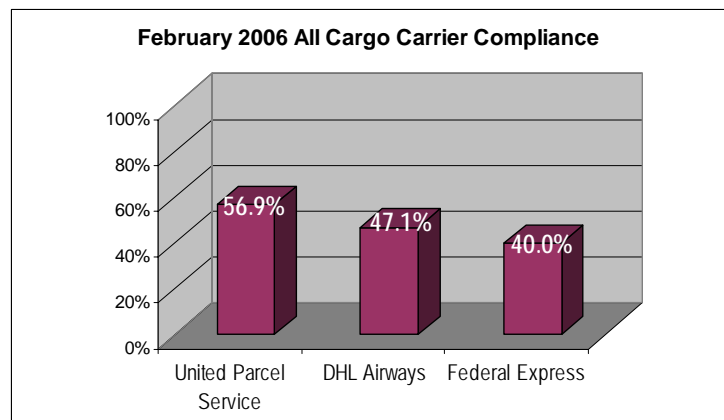
| Carrier                     | ICAO Code | %    | Carrier                   | ICAO Code | %     | Carrier                | ICAO Code | %     |
|-----------------------------|-----------|------|---------------------------|-----------|-------|------------------------|-----------|-------|
| American Airlines           | AAL       | 44.3 | Custom Air Transport      | CTT       | 66.7  | Murray Air             | MUA       | 0.0   |
| Airborne Express            | ABX       | 26.1 | Casino Express            | CXP       | 50.0  | GA                     | N         | 36.5  |
| Air Canada                  | ACA       | 88.9 | Delta Airlines            | DAL       | 42.9  | Nashville Jet Charters | NJC       | 0.0   |
| Ameristar Jet Charter       | AJI       | 0.0  | DHL Airways               | DHL       | 47.1  | Northwest Airlines     | NWA       | 53.3  |
| Ameriflight                 | AMF       | 50.0 | US. Department of Justice | DOJ       | 100.0 | Flight Options         | OPT       | 39.4  |
| American Trans Air          | AMT       | 62.5 | Executive Jet Aviation    | EJA       | 34.0  | Pace Airlines          | PCE       | 40.0  |
| Aero Mexico                 | AMX       | 54.5 | Executive Jet Management  | EJM       | 0.0   | Sun Country Airlines   | SCX       | 48.0  |
| Alaska Airlines             | ASA       | 55.5 | Federal Express           | FDX       | 40.0  | Spirit Aviation        | SJJ       | 0.0   |
| Mesa Airlines               | ASH       | 58.8 | Frontier Airlines         | FFT       | 40.4  | Sky West               | SKW       | 70.0  |
| America West                | AWE       | 75.7 | Citation Chares           | FIV       | 37.5  | Southwest Airlines     | SWA       | 65.8  |
| British Airways             | BAW       | 0.0  | Farelas                   | FRL       | 0.0   | Swift Air              | SWQ       | 37.5  |
| Miami Air                   | BSK       | 0.0  | Hawaiian Airlines         | HAL       | 55.6  | TAG Aviation           | TAG       | 100.0 |
| Continental Express         | BTA       | 72.0 | JetBlue                   | JBU       | 50.0  | United Airlines        | UAL       | 80.2  |
| Capital Cargo International | CCI       | 33.3 | USA Jet Airlines          | JUS       | 50.0  | United Parcel Service  | UPS       | 56.9  |
| Champion Air                | CCP       | 0.0  | Kalitta                   | KFS       | 0.0   | US Airways             | USA       | 15.4  |
| Kalitta Air                 | CSK       | 50.0 | Kitty Hawk Air Cargo      | KHA       | 56.0  | US Check Airlines      | USC       | 32.0  |
| Continental                 | COA       | 64.0 | Flexjet                   | LXJ       | 28.6  | Corporate Flight       | VHT       | 100.0 |
| Flightcraft                 | CSK       | 0.0  | Midwest Express           | MEP       | 73.1  | Westjet Airlines       | WJA       | 69.2  |

### Top Airlines

Among the airlines with 10 or more departures to the east during the month of February 2006, 6 had 70% or more of their aircraft stay within the Tempe Corridor. In January 2006, only 3 airlines had 70% or more of their aircraft comply with the Tempe Corridor.



The compliance rates for the top all cargo airlines with more than 10 departures to the east during the month of February, 2006 were slightly lower than for the previous month, similar to January 2006.



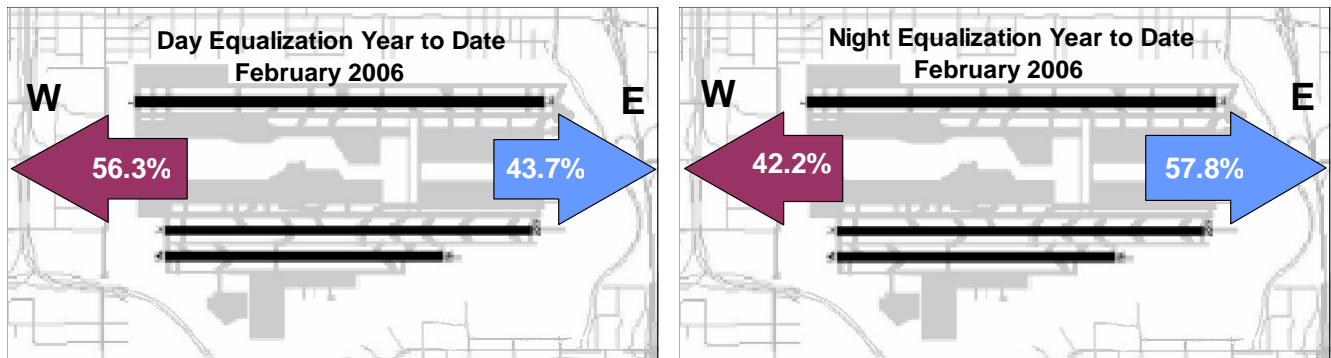
Total number of deviations from the Tempe Corridor for this month was 3429. Southwest had 27.0%, America West 18.4% and Mesa Airlines 18.0%. These airlines had 72.5% of all jet and large turboprop aircraft departures towards the east this month.

### Notices of Deviations

The City of Phoenix issues Notice of Deviation (NOD) to airlines and operators of smaller jet aircraft if any of their jets fails to comply with the 4DME Gate. Because no data has been received on notices this month, the report does not include information on how airlines compare as to the number of notices received relative to the number of east departures for each airline, and to the total number of notices issued.

## 6. East/West Departure Split

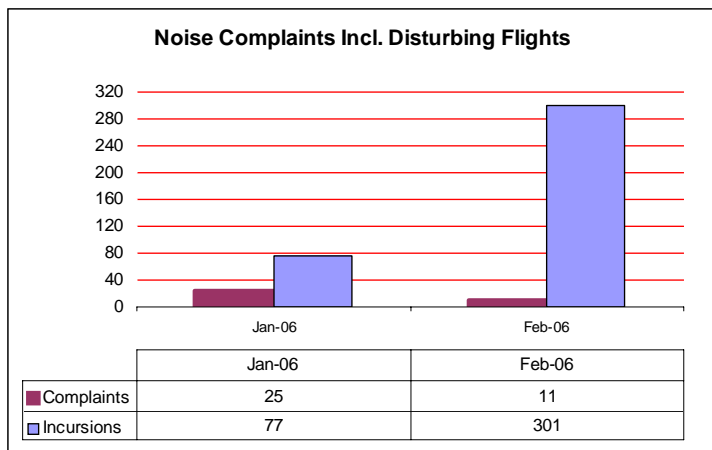
The split in jet and large commuter aircraft departures to the east and west of the Phoenix Sky Harbor International Airport is generally not as favorable for Tempe during the nighttime hours compared to daytime hours. As of February 2006 57.8% of all nighttime and 43.7% of all daytime departures by jet and large turboprop aircraft have gone towards the east over the last 12 months.



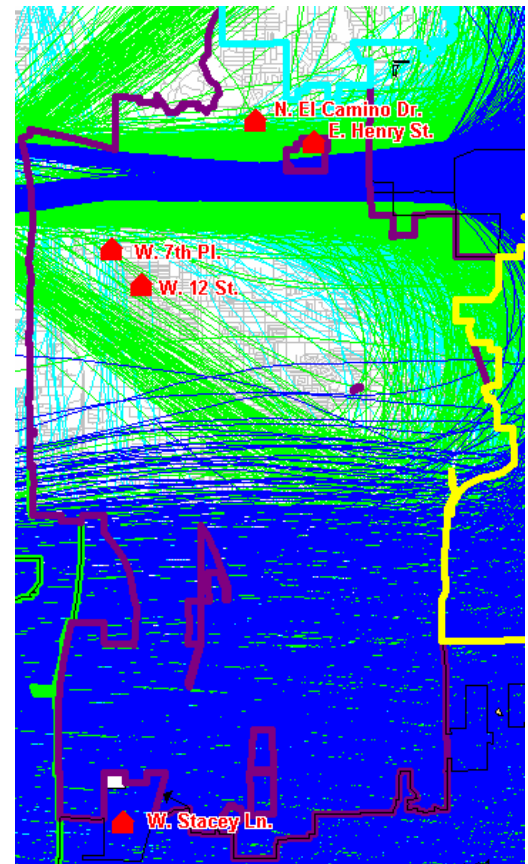
Day and nighttime departures are generated by a query covering day + evening hours and nighttime hours. Day = 7: 00 a.m. to 9:59:59 p.m. local time and Night = 9:59:59 p.m. to 7:00 a.m.

## 7. Complaints

The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport. During February 2006, 5 residents filed 11 noise complaints with the City of Tempe. 94.4% of all reported flights coming from the same household, almost all being carrier arrivals during peaks hours. Carrier departures climbing on southwest and northwest diagonals over central Tempe, some during early hours of the morning depriving citizen of sleep, were also reported. Similar to last moth a citizen reported low flying helicopters over the Ray Road & Priest Drive area.



Green flight tracks = Departures outside the Tempe Corridor  
 Blue flight tracks = Departures inside the Tempe Corridor  
 Turquoise flight tracks = Arrivals  
 Address of resident that filed complaints =



## **8. Unresolved Issues**

- TAVCO has been asked by the chair of the Finance & Aviation Council Committee to review a list of aviation issues suggested by citizens at a Tempe Town Hall meeting for the committee's work plan.
- Review of FAA documents received by the City of Tempe after submitting a FOIA on the suspension of the side step visual approach procedure to Runway 25L.
- Difference between Tempe's "4 DME corridor" and Phoenix's "4 DME Gate", Appendix 1 p. 9



## **Intergovernmental Agreement on Noise Mitigation Flight Procedures**

### **The IGA on Noise Mitigation Flight Procedures**

In 1994 the City of Phoenix and the City of Tempe agreed to continue noise mitigation flight procedures already in use over Tempe:

- Have jets and large aircraft depart to the east over the Salt River:
- Equalize the noise burden from jets and large aircraft departures between east and west during daytime and nighttime hours on an annual basis.

The agreement also introduced a new procedure for mitigation noise from arriving aircraft:

- Make use of a side-step maneuver to land jets and large aircraft on the new third runway (25L) from the east. The City of Tempe had prior to the agreement challenged the plans for the construction of a third runway because of inadequate assessment of the environmental impacts, and agreed to settle the legal challenge in exchange for an Intergovernmental Agreement (IGA) on noise mitigation flight procedures with the City of Phoenix<sup>1</sup>.

### **The Phoenix Sky Harbor International Airport part 150 Noise Compatibility Study**

The City of Phoenix also agreed to submit an update to the F.A.R. Part 150 Noise Compatibility Plan and Program for the Phoenix Sky Harbor International Airport to the FAA no later than start of operation on the new 3<sup>rd</sup> runway. The completed update of September 2000 was sent to the FAA for approval after being approved by the Phoenix Advisory Aviation Board and the Phoenix City Council. Prior to updating the elements of the plan, the FAA had reviewed new noise exposure contour map forecasts that the City of Phoenix had completed in March of 2000. The FAA announced that it had received the September 2000 study in March 2001, and approved it in October of 2001 with effective date September 7, 2001. Inaugural flights from the 3<sup>rd</sup> runway started October 5, 2000, after which the airport closed the runway temporarily to complete installation of runway lights. A few weeks later the 3<sup>rd</sup> runway was in regular use. The September 2000 update included the following recommendations on noise mitigation flight procedures to the east:

- Continue the runway use program calling for the equalization of departure operations to the east and west both daytime and nighttime.
- Continue the 4 DME departure route procedure which overflies the Salt River by all jets and large propeller aircraft departing Runways 8 and 7L
- Implement the 4 DME departure route procedure for all jets and large propeller aircraft departing Runway 7R.
- Establish a side-step approach to Runway 25L for noise abatement.

The study also recommended directing (smaller) propeller aircraft departing Runway 7R to turn to a 120 degree heading upon reaching the end of the runway to concentrate traffic over commercial/industrial corridor of Interstate 10 southeast of the airport.

### **The 4-DME procedure**

#### *The 1993 Environmental Impact Statement (EIS)*

According to the 1993 EIS, which among other planned improvements included the construction of a third runway, departures to the east from the new runway would follow the so-called "One-DME" Standard Instrument Departure procedure (SID) similar to the SID already in use by aircraft departing to the east from the airport<sup>2</sup>.

Phoenix Sky Harbor International Airport to the east keep to the Salt riverbed and avoid flying over populated areas in Tempe.

<sup>1</sup> Maricopa Recorder: 9/28/1994, reference number 94-0706551

<sup>2</sup> Source: Final Environmental Impact Statement Phoenix Sky Harbor International Airport Master Plan Update Improvements, November 1993, Section 5.





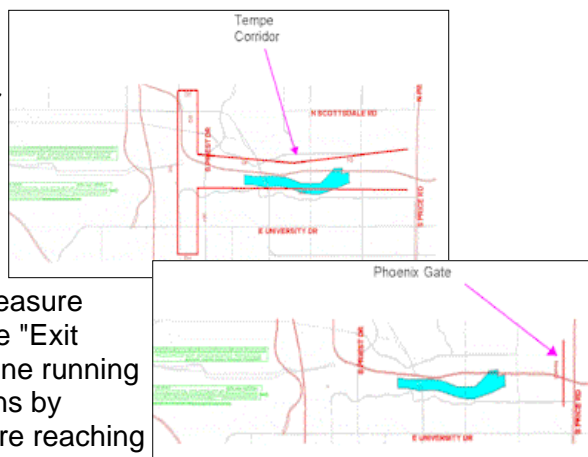
North Runway 8L (Now 8): "Fly heading 0850 to intercept PHX-075, across PXR R-350 at or below 3,000'. At 4 DME east of PHX VORTAC, turn right/left"  
 Center Runway 8R (Now 7L): "Fly direct PHX VORTAC, cross PHR at or below 3,000'. Proceed via PHX R-075 to 4 DME east, turn right/left" (FAA SW-1 of August 10, 2000)

### The 1994 Record of Decision

The continued use of the "One-DME procedure was also stated in the Record of Decision (ROD) for the final EIS, where the FAA approved the 1989 master plan update that included the plans for a third runway. When Phoenix and Tempe signed the Intergovernmental Agreement (IGA) on noise mitigation flight procedures over Tempe, the FAA reaffirmed its commitment to uphold these procedures<sup>3</sup>. The "One-DME procedure" became the "4-DME procedure" when a navigational aid (VORTAC) was moved closer to the airport.

### Measure for Departure Procedure Compliance

Based on the 4-DME Standard Instrument Departure procedure (SID) TAVCO proposed a corridor over the river bed of the Salt River to measure how jet aircraft and large turboprop aircraft<sup>4</sup> complied with the "4-DME procedure" using the Noise and Flight Track Monitoring System that Phoenix had agreed to install. This proposal was adopted by the Tempe City Council, but was rejected by the City of Phoenix. The airport use a vertical line to measure compliance of jet departures called the "4-DME Gate" or the "Exit Window Only Gate", which is a 5,500 feet long imaginary line running north south at 4-DME or approximately at Price Road. Turns by carrier jets north or south away from the Salt riverbed before reaching this line, or failures to stay inside the north or south end of this line are registered and in a compiled format submitted to the airlines in a "Notice of Deviation" letter from the airport administration. Deviations influenced by local weather conditions are excluded from the notification procedure<sup>5</sup>.



This report compares departure compliance using the Tempe Corridor and the Phoenix "4-DME Gate" or "Exit Window Only Gate", and for the Tempe Corridor measure includes large turboprop aircraft because they are part of the 1994 agreement. Since the implementation of the "4-DME Gate" deviation standard for large carriers in 1997, the main issue of concern has been how well these aircraft on departure from

<sup>3</sup> The FAA made an amendment dated September 13, 1994 to the original ROD of January 18, 2004, where it reaffirmed its commitment to noise mitigation measures described on page 15 in the original ROD.

<sup>4</sup> Aircraft certified and operated according to Title 14 FAR Part 121 or 135 with gross weight exceeding 12,500 pounds

<sup>5</sup> Copy of Last Notice of Deviation notification received by the City of Tempe was dated November 2, 2005, due to staffing changes in the Phoenix Aviation Department.

Phoenix Sky Harbor International Airport to the east keep to the Salt riverbed and avoid flying over populated areas in Tempe.

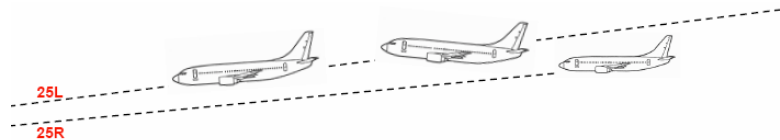
### The "Side Step" procedure

This is a noise mitigating procedure for jets and large turboprop aircraft that approach Phoenix Sky Harbor International Airport from the east to land on the third runway, Runway 25L.



Upon clearance from PHX air traffic control the pilot would stay on the approach path to the center runway, Runway 25R, until approximately 3 NM from the runway end or abeam Sun Devil Stadium at Mill Avenue in Tempe when the pilot would direct the aircraft from a stabilized approach to the center runway towards the left and line up for landing on Runway 25L. The side step procedure intended to keep large aircraft approaches over the river bed as long as possible before they close in towards noise sensitive areas in downtown Tempe south of the riverbed. However, on March 27, 2002 the FAA suspended implementation of a charted "side step" procedure because of flight safety concerns. Presently the FAA is clearing jets and large turboprop aircraft for straight-in approaches to Runway 25L from the east. The FAA has indicated to TAVCO that there were 4 contributing factors that led to negative effects on flight safety and the decision to suspend the side step procedure:

1. The destabilizing effect on the approach.
2. The inability to intercept the glide slope for the third runway.
3. Computer reprogramming going on in the cockpit.
4. Loss of visual reference, particularly at night (Sun Devil Stadium not always being lit).



Because the threshold for Runway 25L is located farther west than the threshold for Runway 25R, the glide slope is higher up than the glide slope to Runway 25R. Using the Runway 25R glide slope a pilot would need to apply power and both turn and climb close to landing to intercept the glide slope for Runway 25L when executing the side step maneuver.

### The Departure Split (Equalization)

This procedure attempts to disperse evenly on an annual basis the noise impact from eastbound and westbound jet and large turboprop aircraft departures between Tempe and Phoenix during day and nighttime hours

